

## **SAR INTEGRATED PRODUCTS FOR COASTAL GEOLOGICAL MAPPING**

1SOUZA FILHO, P.W.M.; 2PARADELLA, W.R. and 1EL-ROBRINI, M. 1Federal University of Pará, Belém, Brazil; 2National Institute for Space Research, S.J.Campos, Brazil.

This work shows an example of digital integration of remote sensing data to coastal study in the Bragança coastal plain, Northern Brazil. This area represents a macrotidal depositional system constituted by wide mangroves, estuaries, salt marsh, tidal shoals, chêniers, coastal dune and beach. The Bragança coastal plain's evolution is related to sea-level changes during the Holocene. The investigation was based on a RADARSAT Fine 1 descending image acquired in 1998 and Landsat TM (reflective) bands collected in 1991. The integration was based on the IHS transformation. Three schemes were used as RGB input channels before the RGB/IHS transformation: (1) three decorrelated channels (TM 3, 4, and 5) selected from a optimum index factor feature selection approach (OIF); (2) three first Principal Component (PC) channels generated from the TM bands; and (3) a Selective Principal Components approach, where the three first channel (Red) was represented by the PC1 from the TM 1, 2, and 3; the second channel (Green) corresponded to the TM 4, and the third channel (Blue) corresponded to the PC1 from the TM 5, and 7. The RADARSAT image was used as Intensity before the IHS-RGB transformation. The visual analysis of the integrated products has allowed to identify the sedimentary environments of the Bragança Coastal Plain related to geobotanical features, given by variations in the vegetation associations and moisture, topographical features and changes in the coastal sedimentary environments.